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10/764,345	01/23/2004	Tie Liu	MS1-1811US	5777
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LEE & HAYES, PLLC 601 W. RIVERSIDE AVENUE SUITE 1400 SPOKANE, WA 99201			RAVETTI, DANTE	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

lhptoms@leehayes.com

Office Action Summary

Application No. 10/764,345	Applicant(s) LIU ET AL.	
Examiner DANTE RAVETTI	Art Unit 3685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 December 2009.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) 2,3,7,8,10,11 and 15 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,4-6,9,13,14 and 16-18 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 23 January 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Acknowledgements

1. This communication is in response to the Request for Continued Examination of Application No. 10/764,345 filed on December 24, 2009.
2. Claims 1, 4-6, 9, 13-14 and 16-18 are currently pending and have been fully examined.
3. Claims 2-3, 7-8, 10-12 and 15 have been cancelled by the Applicant.
4. For the purpose of applying the prior art, PreGrant Publications will be referred to using a four digit number within square brackets, e.g. [0001].

Response to Applicant's Amendments/Remarks

5. Applicant's remarks, filed on December 24, 2009, have been fully considered, but are not persuasive. Applicant argues that the cited prior of Venkatesan does not teach or suggest the following feature:

calculating rational statistics of one or more the regions of the plurality, so that the statistics of a region are representative of the region, wherein the calculating comprises generating the rational statistics of one or more regions of the plurality via a hashing function having a quotient of two weighted, linear, statistical combinations and wherein the rational statistics are semi-global characteristics, wherein numerator of the quotient is a first of the two weighted, linear, statistical combinations and wherein denominator of the quotient is a second of the two weighted, linear, statistical combinations;

Applicant's Specification recites:

[0070] The "rational" statistics, introduced above, are not local characteristics. Rather, the **rational statistics of a region are an excellent example of semi-global characteristics.**

[0103] **The quantization of rational statistics may be carried out via solving a "minimum-norm" type optimization problem.** The following reference provides an example of watermark quantization of statistics via solving a "minimum-norm" type optimization problem: U.S. Patent Application Publication No. 20040001605, entitled "Watermarking Via Quantization of Statistics of Overlapping Regions", filed on Jun. 28, 2002 and published on Jan. 1, 2004.

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The cited passages from Applicant's Specification ([0070], [0103]) gives us corollaries to what "rational statistics" relates to and how they may be performed. In regards to the cited prior art of Vankatesan, it teaches:

An implementation of a technology, described herein, for facilitating watermarking of digital goods. At least one implementation, described herein, **performs quantization watermarking based upon semi-global characteristics of multiple regions of the digital good**. Such regions are permissively overlapping. The scope of the present invention is pointed out in the appending claims. (Abstract)

[0050] In general, the exemplary **watermarker derives robust semi-global characteristics of a digital good**. It quantizes such characteristics for blind watermarking of the digital good.

[0065] The exemplary watermarker is not limited to non-overlapping regions. Rather, it permits overlapping regions. The exemplary watermarker initially **generates a quantization noise sequence using the minimum norm criterion**. The existence of such a noise sequence is guaranteed under some mild assumptions.

[0066] There are, at least, two approaches for the exemplary watermarker. In one approach, the norm of the additive noise introduced in quantization is minimized. In another approach, the distance of multiplicative noise to unity introduced in quantization is minimized.

[0070] Semi-Global Characteristics

[0071] Semi-global characteristics are representative of general characteristics of a group or collection of individual elements. As an example, they may be statistics or features of "regions" (i.e., "segments"). **Semi-global characteristics are not representatives of the individual local characteristics of the individual elements; rather, they are representatives of the perceptual content of the group (e.g., segments) as a whole**.

[0072] **The semi-global characteristics may be determined by a mathematical or statistical representation of a group**. For example, it may be an average of the color values of all pixels in a group. Consequently, such semi-global characteristics may also be called "statistical characteristics." **Local characteristics do not represent robust statistical characteristics**.

[0092] The partitioner 430 separates the transformed good into multiple, pseudorandomly sized, pseudorandomly positioned regions (i.e., partitions). Such regions may overlap. A secret key K is the seed for pseudorandom number generation here. This same K may be used to reconstruct the regions by an exemplary **semi-global statistics quantization watermark detecting system** 500.

[0093] For example, if the good is an image, it might be partitioned into two-dimensional polygons (e.g., regions) of pseudorandom size and location. In another example, if the good is an audio signal, a two-dimensional representation (using frequency and time) of the audio clip might be separated into two-dimensional polygons (e.g., triangles) of pseudorandom size and location.

[0102] **The quantization-noise-vector finder 460 finds minimum norm quantization noise vector such that watermarked data** (which are given by the sum of the unwatermarked host data and the quantization noise vector) **have quantized statistics**. It is possible to perceptually "correct" this minimum norm quantization noise vector with a "perceptual compensation vector,"

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c. After adding this perceptual compensation vector to the **minimum-norm noise vector, the exemplary watermarker still gets the quantized statistics**; however, the marked data have better perceptual quality.

[0104] The perceptual compensation vector that it finds may be **based upon a minimum norm of additive quantization disturbance** (see equation (1.2) below). Alternatively, it is based on a minimum distance of multiplicative quantization disturbance to unity (see equation (1.7) below). See the "Methodological Applications" section below for more details on implementations for specific applications.

Claim 23. A computer-readable medium having computer-executable instructions that, when executed by a computer, performs a method facilitating protection of digital goods, the method comprising obtaining a digital good; **using quantization, watermarking the good with the watermark, wherein such quantization is based upon semi-global characteristics of the regions** of the good, the regions permissively overlapping.

Therefore, since Applicant's Specification teaches that a "rational statistics of a region are an excellent example of semi-global characteristics" and that "quantization of rational statistics may be carried out via solving a "minimum-norm" type optimization problem," and that the cited prior art of Vankatesan teaches "semi-global characteristics" and "minimum-norm" use, the Examiner respectfully disagrees with the Applicant and maintains his rejection.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 18 is rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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As to claim 18, Applicant recites, "generating pseudo-random weight factors, a and b;" however, Applicant Specification seems to be silent this limitation of generating pseudo-random weight factors.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. §112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 18 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "approximately invariant" in claim 18 is a relative term which renders the claim indefinite. The term "approximately invariant" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 4-6, 9, 13-14 and 16-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Venkatesan et al., (US 2004/0001605) ("Vankatesan").

As to claim 1:

Vankatesan teaches substantially as claimed:

obtaining a digital good, the digital good having content which has perceptual characteristics ([0085]-[0093], Claim 1);
partitioning the digital goods into a plurality of regions ([0085]-[0093], Claim 1);
calculating rational statistics of one or more the regions of the plurality, so that the statistics of a region are representative of the region, wherein the calculating comprises generating the rational statistics of one or more regions of the plurality via a hashing function having a quotient of two weighted, linear, statistical combinations and wherein the rational statistics are semi-global characteristics, ([0085]-[0093], Claim 1);
quantizing the rational statistics ([0085]-[0093], Claim 1);
marking the digital good with the quantized rational statistics of the plurality of the regions ([0085]-[0093], Claim 1).
weighted, linear, statistical combinations ([0061]);

Vankatesan does not expressly teach:

wherein numerator of the quotient is a first of the two weighted, linear, statistical combinations and wherein denominator of the quotient is a second of the two weighted, linear, statistical combinations;

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However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors $[\alpha_{i,j}]$ s.t. they are uniform in regions $[R_{i,j}]$ and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "Robust image hashing," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", IHW 2001, Pittsburgh Pa. for audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

"Robust Image Hashing" was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.¹

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.²

As to claims 2 and 3:

Canceled by the Applicant

As to claims 4 and 17:

wherein the hashing function is h and h is defined by ([0131]-[0144])

¹ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

² KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

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$$h_i = \frac{\sum_{j \in R_i} \alpha_{ij} s_j}{\sum_{j \in R_i} b_{ij} s_j}$$

Where:

- α_{ij} is the j^{th} element of α_i and α_i are a pseudo-random generated weight factors;
- b_{ij} is the j^{th} element of b_i and b_i are a pseudo-random generated weight factors;
- s denotes the digital good of dimension $N \times 1$;
- R_i are the plurality of regions, where $R_i \subseteq \{1, 2, \dots, N\}$.

As to claim 5:Vankatesan expressly teaches:

wherein the partitioning comprises segmenting the digital good in a plurality of overlapping regions ([0092], Claim 2);

As to claim 6:Vankatesan expressly teaches:

wherein the watermarking comprises embedding a watermark via quantization ([0100], [0106], and Claim 8);

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As to claims 7 and 8:

Cancelled by the Applicant

As to claim 9:

Vankatesan expressly teaches:

obtaining a digital good, the digital good having content which has perceptual characteristics ([0085]-[0093], Claim 1); and

using quantization (Abstract, [0016], [0044], [0046], [0049], [0062], [0065], [0066], [0189], [0198]-[0199], Figure 7),

watermarking the digital good with a watermark ([0007], [0014], [0019], [0029]-[0030], [0044], [0046], [0049], [0068], [0076], Figure 1);

wherein such quantization is based upon semi-global characteristics of regions of the digital good (Abstract, [0050], [0069]-[0074], [0092], Claim 23-28, 33),

wherein such semi-global characteristics are generated via a hashing function employing a quotient of at least two weighted linear combinations of statistics of the regions of the digital good (Abstract, [0050], [0069]-[0074], [0092], Claim 23-28, 33);

Vankatesan does not expressly teach:

wherein numerator of the quotient is a first of the two weighted, linear, statistical combinations and wherein denominator of the quotient is a second of the two weighted, linear, statistical combinations;

However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors $[\alpha_{i,j}]$ s.t. they are uniform in regions $[R_{i,j}]$ and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "Robust image hashing," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", IHW 2001, Pittsburgh Pa. for

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audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

“Robust Image Hashing” was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.³

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.⁴

As to claims 10-12:

Cancelled by the Applicant

As to claim 13:

Vankatesan teaches substantially as claimed:

a partitioner configured to segment a digital good into a plurality of regions ([0085], [0090], [0092]-[0093], [0095], [0098], Claim 40);

a region-statistics calculator configured to calculate rational statistics of one or more of the plurality of regions, wherein the statistics of a region are representative of that region, wherein the region-statistics calculator is further configured to generate the rational statistics of one or more regions of the plurality via a hashing function having a quotient of two weighted, linear, statistical combinations and wherein the rational statistics are semi-global characteristics ([0085], [0098], [0100], [0109]-[0110], Claim 40);

³ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

⁴ KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

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A region quantizer configured to quantize the rational statistics of a region (Claim 40); and

A digital-goods watermarker configured to generate a watermarked good using and the quantized rational statistics (Claim 40);

Vankatesan does not expressly teach:

wherein numerator of the quotient is a first of the two weighted, linear, statistical combinations and wherein denominator of the quotient is a second of the two weighted, linear, statistical combinations;

However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors $[\alpha_{.1}]$ s.t. they are uniform in regions $[R_{.1}]$ and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "Robust image hashing," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", IHW 2001, Pittsburgh Pa. for audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

"Robust Image Hashing" was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.⁵

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known

⁵ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

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in the field, the combination must do more than yield a predictable result.⁶

As to claim 14:

Vankatesan expressly teaches:

wherein the region statistics is further configured to generate the rational statistics of one or more regions of the plurality via a hashing function ([0098], [0206], [0215]-[0216], Claim 40);

As to claim 15:

Canceled by the Applicant

As to claim 16:

Vankatesan expressly teaches:

wherein the partitioner is further configured to segment a digital good into a plurality of overlapping regions ([0030], [0044], [0065], [0073]-[0082], Figure 3, Claim 42);

As to claim 18:

Vankatesan expressly teaches:

obtaining a digital good, the digital good having content which has perceptual characteristics ([0030], [0044], [0065], [0073]-[0082], Figure 3, Claim 42);

partitioning the digital good into a plurality of regions ([0085]-[0093], Figure 4-6, Claim 1);

wherein the partitioning comprises segmenting the digital good into a plurality of overlapped regions ([0092], Claim 2);

calculating rational statistics of one or more the regions of the plurality, the calculated rational statistics of a particular region are representative of the particular region, wherein the rational statistics are semi-global characteristics ([0085]-[0093], Claim 1);

⁶ KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

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and stay approximately invariant under any local magnitude-scaling of the digital good;

quantizing the rational statistics ([0085]-[0093], Claim 1);

watermarking the digital good with the quantized rational statistics of the plurality of the regions, wherein the watermarking comprises embedding a watermark via quantization, whereby the watermarking facilitates protection of the digital good so that the digital good is slightly altered to embed a detectable mark in manner that preserves the perceptual characteristics of the content, the watermark associating the content of the digital good with a producer, provider, content owner, or distributor of the content ([0085]-[0093], Claim 1);

the calculating comprising:

generating pseudo-random weight factors, a and b ([0095]-[0096], [0113], [0122], [0130], [0133]);

generating the rational statistics of one or more regions of the plurality via a hashing function, h , ([0131]-[0144]);

Vankatesan does not expressly teach:

that hashing function having quotient of two weighted, linear, statistical combinations;

However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors $[\alpha_{i,j}]$ s.t. they are uniform in regions $[R_{i,j}]$ and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "Robust image hashing," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", IHW 2001, Pittsburgh Pa. for audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

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“Robust Image Hashing” was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.⁷

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.⁸

$$h_i = \frac{\sum_{j \in R_i} \alpha_{ij} s_j}{\sum_{j \in R_i} b_{ij} s_j}$$

Where:

- α_{ij} is the j^{th} element of α_i , and α_i are a pseudo-random generated weight factors;
- b_{ij} is the j^{th} element of b_i , and b_i are a pseudo-random generated weight factors;
- s denotes the digital good of dimension $N \times 1$;
- R_i are the plurality of regions, where $R_i \subseteq \{1, 2, \dots, N\}$.

Conclusion

⁷ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

⁸ KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

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12. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Mr. Dante Ravetti whose telephone number is (571) 270-3609. The examiner can normally be reached on Monday – Thursday 9:00am-5:00pm.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Calvin Hewitt may be reached at (571) 272-6709. The fax phone number for the organization where this application or proceeding is assigned is (571) 270-4609.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, please contact the Electronic Business Center (EBC) at 1-(866) 217-9197. If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 1-(800) 786-9199 (IN USA or CANADA) or 1-(571) 272-1000.

/Dante Ravetti/
Examiner, Art Unit 3685
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/Calvin L Hewitt II/
Supervisory Patent Examiner, Art Unit 3685